

**REMARKS**

Claims 1-17 were pending in the present application. New claim 18 has been added herein. Thus claims 1-18 are now pending. The applicants respectfully request reconsideration and allowance of the present application in view of the above amendments and the following remarks.

The applicants note with appreciation the acknowledgement of the claim for priority under section 119 and the notice that all certified copies of the priority documents have been received.

The applicants acknowledge and appreciate receiving a copy of the form PTO-1449 submitted with the Information Disclosure Statement filed on February 26, 2004 on which the Examiner has initialed all listed items.

Claim 1 stands objected to as being allegedly unclear. Applicants respectfully disagree and first note that the claimed driving circuit, *inter alia*, operates under an instructed driving state. The claimed driving control unit is for, *inter alia*, instructing the driving state of the semiconductor switching element to the driving circuit. Thus, the claim is clear as originally submitted.

Claims 11 stands rejected under 35 USC §112, second paragraph, as being allegedly indefinite. Without acknowledging the propriety of the rejection, the applicants have pointed out where in the specification an explanation of the claim can be found.

In order to establish a *prima facie* case of indefiniteness, evidence must be provided to show that one of ordinary skill in the art would not have understood the meaning of the claim within a reasonable degree of certainty. Applicants submit that, given the description in applicants' specification beginning on page 11, line 6, one of ordinary skill in the art would understand the meaning of the claim. Since the overheat signal is set to an audible frequency

band, human perception is provided, a human could hear the signal since the signal generates energy in the audible frequency band. Applicants respectfully submit that no evidence has been provided to support the rejection, and that an object would have been a proper way to address matters of clarity or form. Given the clear description provided in the cited portion of applicants' specification no amendments are required and the rejection should be withdrawn.

Claims 1, 2, 5, 7, 8 and 10 stand rejected under 35 USC §103(a) as being allegedly unpatentable over Sajima, U.S. Patent No. 5,530,788 in view of Kudo, JP 10-271837. The rejection is respectfully traversed.

Applicants note that claim 1 recites the novel embodiment described generally on page 14-15 in which a motor driving device (1) includes a semiconductor switching element (7) interposed in a current flowing passage to a motor (2); a PWM control unit (14) for generating a PWM signal having a predetermined PWM frequency; a driving circuit (15) for making the semiconductor switching element (7) carry out a switching operation under plural driving states, and driving the semiconductor switching element (7) in PWM switching mode according to the PWM signal under an instructed driving state; an overheat state detecting unit (16) for outputting an overheat detecting signal on a condition that a temperature of the semiconductor switching element (7) exceeds a predetermined threshold value and the semiconductor switching element (7) falls into an overheat state or a state in which the probability that the semiconductor switching element (7) will shift to the overheat state is higher than a predetermined probability; and a driving control unit (17) for instructing the driving state of the semiconductor switching element (7) to the driving circuit (15) so that the rise time and fall time of the semiconductor switching element (7) during an output period of the overheat state detecting signal are shorter than the rise time and fall time of the semiconductor switching element (7) during a non-output period of the overheat state detecting signal.

In making the rejection, the Examiner asserts that Sajima's switching period measuring and decision circuits 14, 14A amount to the claimed driving control unit, but admits that Sajima fails to teach the functions of the claimed driving control unit and further asserts that Kudo accounts for the deficiency in the teaching of Sajima in this regard. Applicants respectfully disagree with this characterization and submit that the applied art combination is improperly motivated and still fails to teach or suggest the features of the claimed driving control unit.

A close review of Sajima reveals that the switching element is *fixed* in the second state when overcurrent is detected. In Kudo, the gate signal of the switching element is intercepted during overcurrent and action is taken during a PWM fall interval and the next fall interval. No evidence has been provided, *in the references*, to show why one of ordinary skill in the art would have been motivated to combine them. Applicants submit that there would be no advantage to combining the references since Sajima fixes the switching element in the second state and Kudo intercepts the gate signal, neither of which actions can be combined to teach the claimed invention. Thus, even if properly combined, the applied art combination still fails to teach or suggest, for example, a driving control unit instructing the driving state of the semiconductor switching element to the driving circuit so that the rise time and fall time of the semiconductor switching element during an output period of the overheat state detecting signal are shorter than the rise time and fall time of the semiconductor switching element during a non-output period of the overheat state detecting signal.

Accordingly, for at least the reasons set forth hereinabove, a *prima facie* case of obviousness has not properly been established in that the applied art combination is improperly motivated and still fails to teach or suggest all the claimed features as required. It is respectfully requested that the rejection of independent claim 1 be reconsidered and withdrawn.

Claims 2, 5, 7, 8 and 10, by virtue of depending from independent claim 1, are allowable for at least the reasons set forth hereinabove. It is respectfully requested therefore that the rejection of claims 2, 5, 7, 8 and 10 be reconsidered and withdrawn.

Claims 3, 12, 14, and 16 stand rejected under 35 USC §103(a) as being allegedly unpatentable over Sajima, U.S. Patent No. 5,530,788 and Kudo, JP 10-271837, and further in view of Li, U.S. Patent No. 4,547,715. The rejection is respectfully traversed.

Claims 3, 12, 14, and 16, by virtue of depending from claim 1, are allowable for at least the reasons set forth hereinabove. It is respectfully requested therefore that the rejection of claims 3, 12, 14, and 16 be reconsidered and withdrawn.

Applicants further note that claim 12 is independently allowable as follows. Claim 12 recites the novel embodiment discussed, for example, on page 15 lines 15-23 of applicants' specification in which the driving circuit (15) varies a resistance value of resistor (25) connected to the semiconductor switching element (7) on the basis of an instruction from the driving control unit (17) to thereby vary the rise time and fall time of the semiconductor switching element (7) by operation of switch (26).

In making the rejection, the Examiner asserts that variable resistor 12 of Li amounts to the above described features of claim 12. Applicants strongly contend that resistor 12 of Li receives no instruction from a control unit as in the claimed invention. Rather, in col 2, lines 20-22 of Li, resistor 12 is described as being set to accommodate the appropriate size of the semiconductor device. Li fails to teach or suggest the configuration of the driving circuit (15) shown for example in Fig. 1. Accordingly, at least claim 12 is independently allowable.

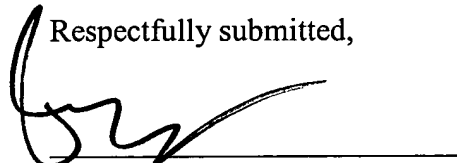
New claim 18 provides additional clarification for the above noted features by reciting, for example, that the driving circuit (15), under instruction from the driving control unit (17), lowers a resistance value of a gate resistance connected to the semiconductor switching element

(7) such that the lower resistance value of the gate resistance lowers a charge time associated with a gate capacitance of the semiconductor switching element to lower the rise time and the fall time of the semiconductor switching element during the output period of the overheat state detecting signal. A close review of page 14, lines 16-27 and page 15, lines 15-23 reveals that when resistor (25) is switched using switch (26) into parallel relation to resistor (24), the gate resistance is reduced and the charge/discharge time of the gate capacitances  $C_{gd}$  and  $C_{gs}$  are shortened. Accordingly, the rise time and fall time are shortened. Favorable consideration of claim 18 is respectfully requested.

In view of the foregoing, the applicants respectfully submit that the present application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the examiner is invited to contact the undersigned by telephone.

Please charge any unforeseen fees that may be due to Deposit Account No. 50-1147.

Respectfully submitted,



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